

What is claimed is:

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1. A method for transmitting packets over a packet switch network which includes a plurality of multimedia transceivers for sending and receiving multimedia communications, the method comprising the steps of:  
5 providing at least two predefined network states for comparing with a monitored network state;  
monitoring said network state;  
selecting one state of the at least two predefined network states in  
10 accordance with said monitored network state;  
sampling at least one type of media at a transmitter for providing at least one media sample;  
packaging said at least one media sample into a packet; and  
transmitting said packet over said network, wherein the number of media  
15 samples in a packet is in accordance with said selected predefined network state.
  2. The method of claim 1, wherein said at least one media sample includes a plurality of media samples, and said plurality of media samples are arranged in at  
20 least one frame within said packet.
  3. The method of claim 2, wherein said packaging step includes packaging said at least one media sample in accordance with the media quality of the receiving transceiver.  
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  4. The method of claim 3, wherein said packaging step includes packaging said at least one frame into said packet with a first network protocol parameter.
  5. The method of claim 4, wherein said first network protocol parameter  
30 includes RFC 1889.
  6. The method of claim 3, wherein said at least one frame includes at least two frames, said at least two frames including at least one frame and at least one
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redundant frame and said packaging step includes packaging said at least two frames into said packet with a second network protocol parameter.

- 5 7. The method of claim 6, wherein said second network protocol parameter includes RFC 2198.

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8. The method of claim 1, wherein said step of providing two predefined network states includes the steps of:
- analyzing said network in accordance with a received audio communication;
- 10 categorizing said network into at least two states upon analyzing said network, said at least two states corresponding to said at least two predefined network states; and
- packaging at least one media frame according to each of said at least two predefined network states.
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9. The method of claim 1, wherein the step of monitoring comprises the steps of:
- transmitting a test packet between a first transceiver and a second
- 20 transceiver; and
- measuring at least one network parameter for determining said network state at said first transceiver.

10. The method of claim 9, wherein said at least one network parameter is a period of time for said test packet to travel from the first transceiver to said second transceiver and back to said first transceiver.
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11. The method of claim 9, wherein said at least one network parameter is a count of packets lost in the transmission from first transceiver to the second transceiver and back to said first transceiver.
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12. An apparatus for transmitting packets over a packet switch network comprising.

storage means for storing data corresponding to at least two predefined network states for comparing with a detected network state;  
monitoring means for monitoring and detecting at least one network state;  
selecting means for selecting at least one state of the at least two predefined network state with accordance to said detected network state;  
5 sampling means for providing samples of at least one media type;  
packaging means for packaging at least one protocol parameter with said media samples for providing a packet; and  
transmitting means for transmitting said packet in accordance with said  
10 detected network state.

13. The apparatus of claim 12, wherein the sampling means comprises:  
an audio sampling device; and  
a video sampling device.

14. The apparatus of claim 12, further comprising:  
an allocator operably coupled to said monitoring means for receiving said network state; and  
at least one media bit rate controller for controlling transmission speed  
20 and said network load in accordance with said detected network state.

15. The apparatus of claim 14, wherein said at least one media bit rate controller is an audio bit rate controller.

25 16. The apparatus of claim 15, wherein said at least one media bit rate controller is a video bit rate controller.

17. An apparatus for controlling transmitting of media streams over a packet switch network comprising:  
30 a network monitor for monitoring a network state;  
a selector for selecting at least one state of the at least two predefined network states in accordance with said monitored network state;  
sampling means for providing at least one media sample of at least one media type;

compressing means for compressing said at least one media sample into at least one media frame;

packaging means for packaging at least one communication protocol parameter with said at least one media frame for providing a packet; and

5 means for transmitting said packet which is constructed with accordance to said network state.

18. The apparatus of claim 17, wherein said sampling means further comprise:

10 an audio sampling device; and  
a video sampling device.

19. The apparatus of claim 17, wherein said compressing means comprise:  
15 an audio compression for providing audio frames;  
and a video for providing video frames.

20. A method for transmitting packets over a packet switch network which includes a plurality of multimedia transceivers for sending and receiving multimedia communications, the method comprising the steps of:

20 providing at least two predefined network quality states;  
monitoring said network to detect at least one network quality state;  
selecting one quality state from the at least two predefined network quality states in accordance with said detected network quality state;  
creating at least one packet by placing at least one audio or video sample  
25 and at least one network protocol parameter into a package in accordance with said selected network quality state; and  
selecting a quality level in accordance with said selected network quality state for packet transmission; and  
transmitting said packet over said network.

30 21. The method of claim 20, wherein said network quality states are selected from the group consisting of  
not sufficient quality;  
sufficient quality; and

high quality.

22. A method of claim 21, wherein said not sufficient quality state is a monitored transmission of packets via a first protocol over said network which result a packet loss
23. The method of claim 22, wherein said sufficient quality state is a monitored transmission of packet which includes at least two audio frames via a second protocol which includes at least one packet frame having at least one redundant frame over said network.
24. The method of claim 23, wherein said sufficient quality state is a monitored transmission of a packet which includes at least two audio frames via the first protocol over said network, which transmission result a packet loss.
25. The method of claim 21, wherein said high quality state is a monitored transmission of a packet which includes a single audio frame via the second protocol over said network, which transmission result a packet loss.
26. The method of claim 25, wherein said high quality state is a monitored transmission of a packet which includes a single audio frame, via said first protocol over said network.
27. The method of claim 21, wherein the step of selecting said quality state further includes the step of:  
selecting a network quality state in accordance with an available network bandwidth.
28. The method of claim 27, wherein the step of selecting comprises:  
selecting a lower quality state from said presently selected quality state if available network bandwidth is decreased.
29. A method for transmitting at least one packet over a packet switch network comprising the steps of:

monitoring said network for determining the available bandwidth for transmission over said network; and

determining a quality state for transmission, said quality state corresponding to said detected available bandwidth;

5 adjusting bit rate for transmission in accordance with said determined quality state; and

transmitting said at least one packet over said network in accordance with the adjusted bit rate.

10 30. The method of claim 29, wherein said step of adjusting bit rate includes the step of:

increasing bit rate for transmission with increased quality upon detection of increased available bandwidth.

15 31. An apparatus for transmitting packets over a packet switch network comprising:

a storage device having means for providing at least two predefined network states for comparing with a detected network state;

20 a monitor for operatively connecting to said network for monitoring said network and detecting at least one network state;

a selector for selecting at least one state of the at least two predefined network states with accordance said detected network state;

a sampler;

25 a packager, said packager for creating packets including samples of media from said sampler; and

a transmitter for transmitting said packets in accordance with the detected network state.

30 32. The apparatus of claim 31, wherein the sampler includes:  
an audio sampling device; and  
a video sampling device.

33. The apparatus of claim 31, further comprising:

an allocator operably coupled to said monitor for receiving signals corresponding to said detected network state; and  
at least one media bit rate controller for controlling transmission speed and said network load with accordance with said detected network state.

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34. The apparatus of claim 33, wherein said at least one media bit rate controller is an audio bit rate controller.

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35. The apparatus of claim 33, wherein said at least one media bit rate controller is a video bit rate controller.

36. A method for packaging a packet for transmission over a packet switch network, comprising the steps of:

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monitoring said network for available bandwidth;  
detecting said available bandwidth;  
establishing a bit rate for transmission in accordance with said detected available bandwidth; and  
packaging media frames and protocol parameters in accordance with established bit rate.

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37. The method of claim 36, wherein said packaging step includes providing at least one redundant frame with a second protocol packet when said bit rate is above a predetermined value.

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38. The method of claim 36, wherein said packaging step includes packaging with a first protocol packet when said bit rate is below a predetermined value.